

FIG. 1 Personal Digital Assistant Communication Techniques

100

PRIOR ART

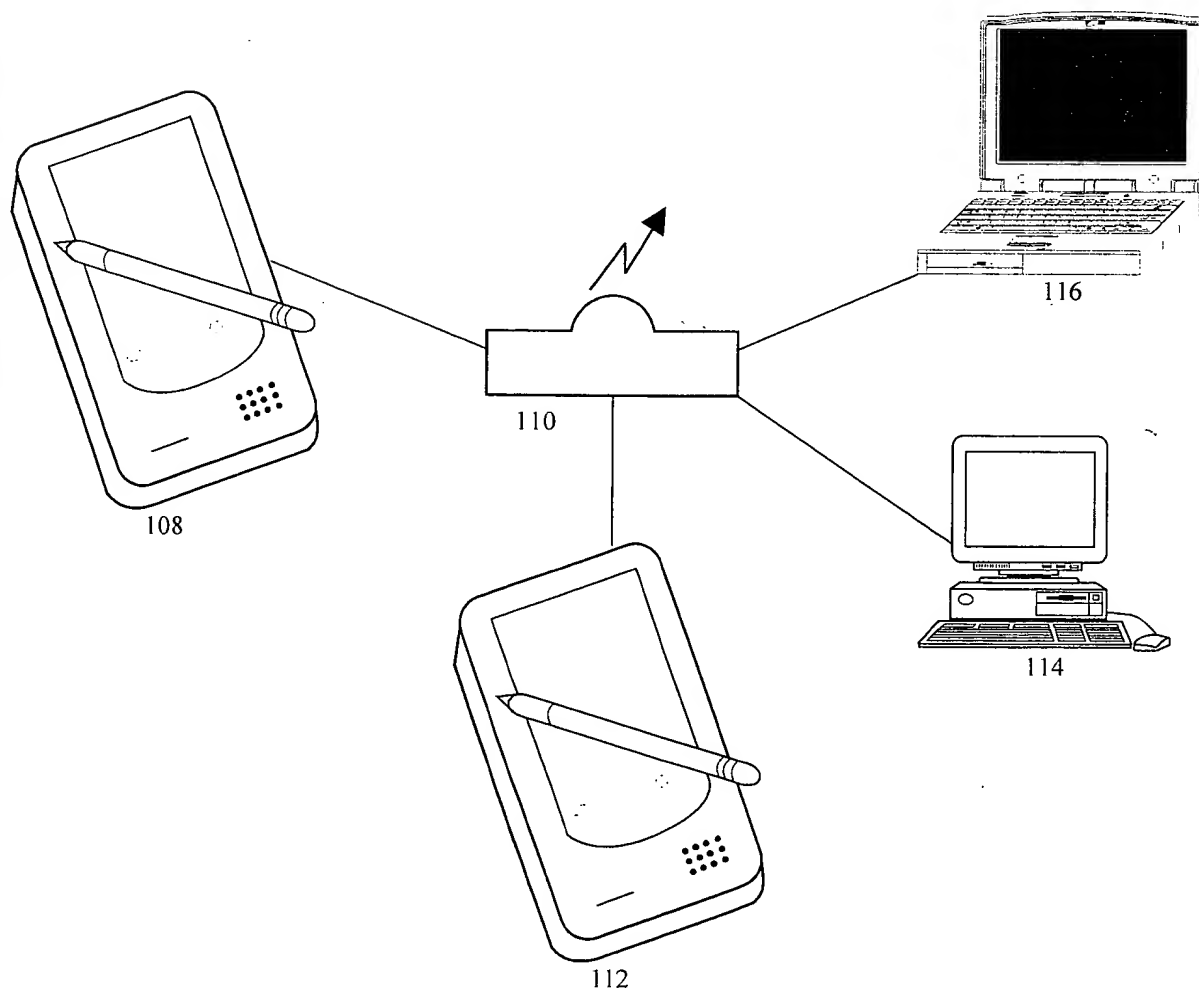
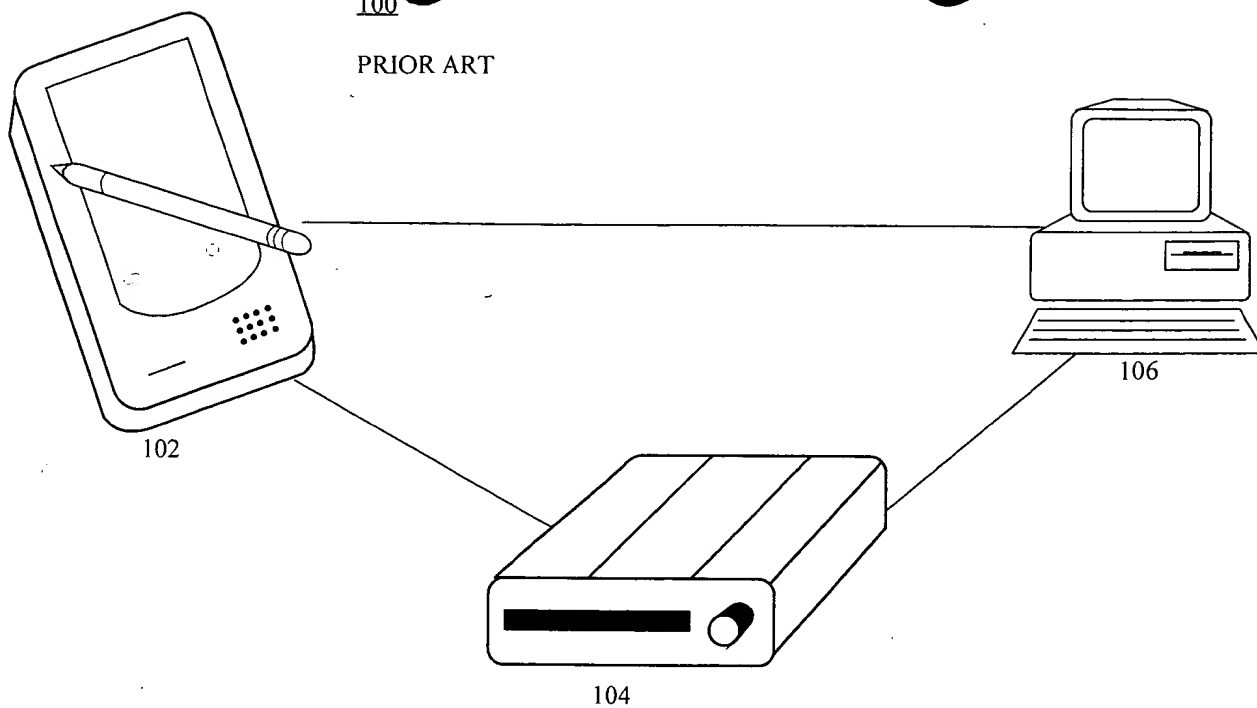


FIG. 100

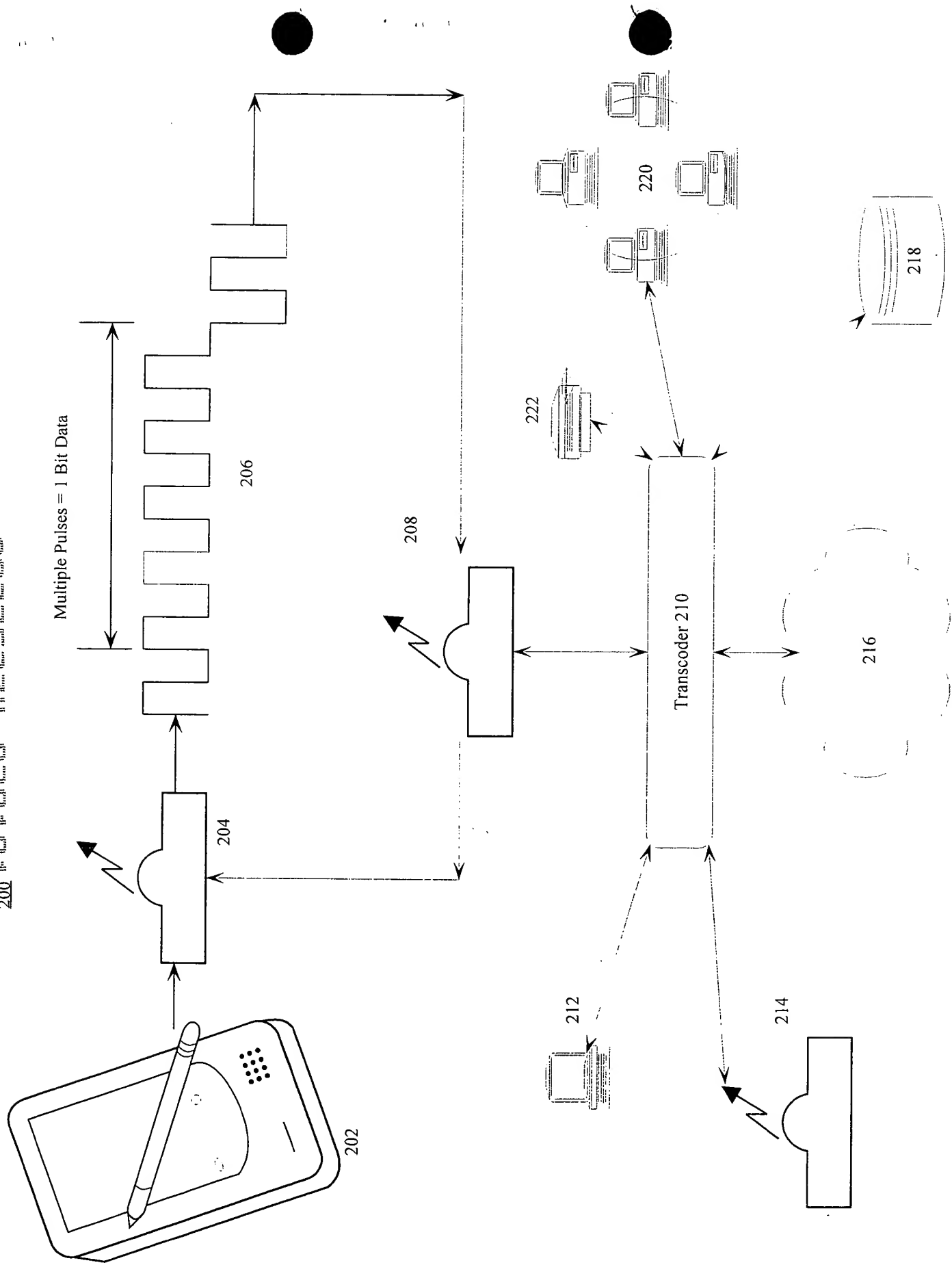
200  $\frac{1}{2}$   $\frac{1}{4}$   $\frac{1}{8}$   $\frac{1}{16}$   $\frac{1}{32}$   $\frac{1}{64}$   $\frac{1}{128}$   $\frac{1}{256}$   $\frac{1}{512}$   $\frac{1}{1024}$   $\frac{1}{2048}$   $\frac{1}{4096}$   $\frac{1}{8192}$   $\frac{1}{16384}$   $\frac{1}{32768}$   $\frac{1}{65536}$   $\frac{1}{131072}$   $\frac{1}{262144}$   $\frac{1}{524288}$   $\frac{1}{1048576}$   $\frac{1}{2097152}$   $\frac{1}{4194304}$   $\frac{1}{8388608}$   $\frac{1}{16777216}$   $\frac{1}{33554432}$   $\frac{1}{67108864}$   $\frac{1}{134217728}$   $\frac{1}{268435456}$   $\frac{1}{536870912}$   $\frac{1}{1073741824}$   $\frac{1}{2147483648}$   $\frac{1}{4294967296}$   $\frac{1}{8589934592}$   $\frac{1}{17179869184}$   $\frac{1}{34359738368}$   $\frac{1}{68719476736}$   $\frac{1}{137438953472}$   $\frac{1}{274877906944}$   $\frac{1}{549755813888}$   $\frac{1}{1099511627776}$   $\frac{1}{2199023255552}$   $\frac{1}{4398046511104}$   $\frac{1}{8796093022208}$   $\frac{1}{17592186044416}$   $\frac{1}{35184372088832}$   $\frac{1}{70368744177664}$   $\frac{1}{140737488355328}$   $\frac{1}{281474976710656}$   $\frac{1}{562949953421312}$   $\frac{1}{1125899906842624}$   $\frac{1}{2251799813685248}$   $\frac{1}{4503599627370496}$   $\frac{1}{9007199254740992}$   $\frac{1}{18014398509481984}$   $\frac{1}{36028797018963968}$   $\frac{1}{72057594037927936}$   $\frac{1}{144115188075855872}$   $\frac{1}{288230376151711744}$   $\frac{1}{576460752303423488}$   $\frac{1}{1152921504606846976}$   $\frac{1}{2305843009213693952}$   $\frac{1}{4611686018427387904}$   $\frac{1}{9223372036854775808}$   $\frac{1}{18446744073709551616}$   $\frac{1}{36893488147419103232}$   $\frac{1}{73786976294838206464}$   $\frac{1}{147573952589676412928}$   $\frac{1}{295147905179352825856}$   $\frac{1}{590295810358705651712}$   $\frac{1}{1180591620717411303424}$   $\frac{1}{2361183241434822606848}$   $\frac{1}{4722366482869645213696}$   $\frac{1}{9444732965739290427392}$   $\frac{1}{18889465931478580854784}$   $\frac{1}{37778931862957161709568}$   $\frac{1}{75557863725914323419136}$   $\frac{1}{151115727451828646838272}$   $\frac{1}{302231454903657293676544}$   $\frac{1}{604462909807314587353088}$   $\frac{1}{1208925819614629174706176}$   $\frac{1}{2417851639229258349412352}$   $\frac{1}{4835703278458516698824704}$   $\frac{1}{9671406556917033397649408}$   $\frac{1}{19342813113834066795298816}$   $\frac{1}{38685626227668133590597632}$   $\frac{1}{77371252455336267181195264}$   $\frac{1}{154742504910672534362390528}$   $\frac{1}{309485009821345068724781056}$   $\frac{1}{618970019642690137449562112}$   $\frac{1}{1237940039285380274899124224}$   $\frac{1}{2475880078570760549798248448}$   $\frac{1}{4951760157141521099596496896}$   $\frac{1}{9903520314283042199192993792}$   $\frac{1}{19807040628566084398385987584}$   $\frac{1}{39614081257132168796771975168}$   $\frac{1}{79228162514264337593543950336}$   $\frac{1}{158456325028528675187087900672}$   $\frac{1}{316912650057057350374175801344}$   $\frac{1}{633825300114114700748351602688}$   $\frac{1}{1267650600228229401496703205376}$   $\frac{1}{2535301200456458802993406410752}$   $\frac{1}{5070602400912917605986812821504}$   $\frac{1}{10141204801825835211973625643008}$   $\frac{1}{20282409603651670423947251286016}$   $\frac{1}{40564819207303340847894502572032}$   $\frac{1}{81129638414606681695789005144064}$   $\frac{1}{162259276829213363391578010288128}$   $\frac{1}{324518553658426726783156020576256}$   $\frac{1}{649037107316853453566312041152512}$   $\frac{1}{1298074214633706907132624082305024}$   $\frac{1}{2596148429267413814265248164610048}$   $\frac{1}{5192296858534827628530496329220096}$   $\frac{1}{10384593717069655257060992658440192}$   $\frac{1}{20769187434139310514121985316880384}$   $\frac{1}{41538374868278621028243970633760768}$   $\frac{1}{83076749736557242056487941267521536}$   $\frac{1}{166153499473114484112975882535043072}$   $\frac{1}{332306998946228968225951765070086144}$   $\frac{1}{664613997892457936451903530140172288}$   $\frac{1}{1329227995784915872903807060280344576}$   $\frac{1}{2658455991569831745807614120560689152}$   $\frac{1}{5316911983139663491615228241121378304}$   $\frac{1}{10633823966279326983230456482242756608}$   $\frac{1}{21267647932558653966460912964485513216}$   $\frac{1}{42535295865117307932921825928971026432}$   $\frac{1}{85070591730234615865843651857942052864}$   $\frac{1}{170141183460469231731687303715884105728}$   $\frac{1}{340282366920938463463374607431768211456}$   $\frac{1}{680564733841876926926749214863536422912}$   $\frac{1}{1361129467683753853853498429727072845824}$   $\frac{1}{2722258935367507707706996859454145691648}$   $\frac{1}{5444517870735015415413993718908291383296}$   $\frac{1}{10889035741470030830827987437816582766592}$   $\frac{1}{217780$ 

FIG. 3 Remote Optical Digital Networking Showing the Internal Structure of an Access Point

300

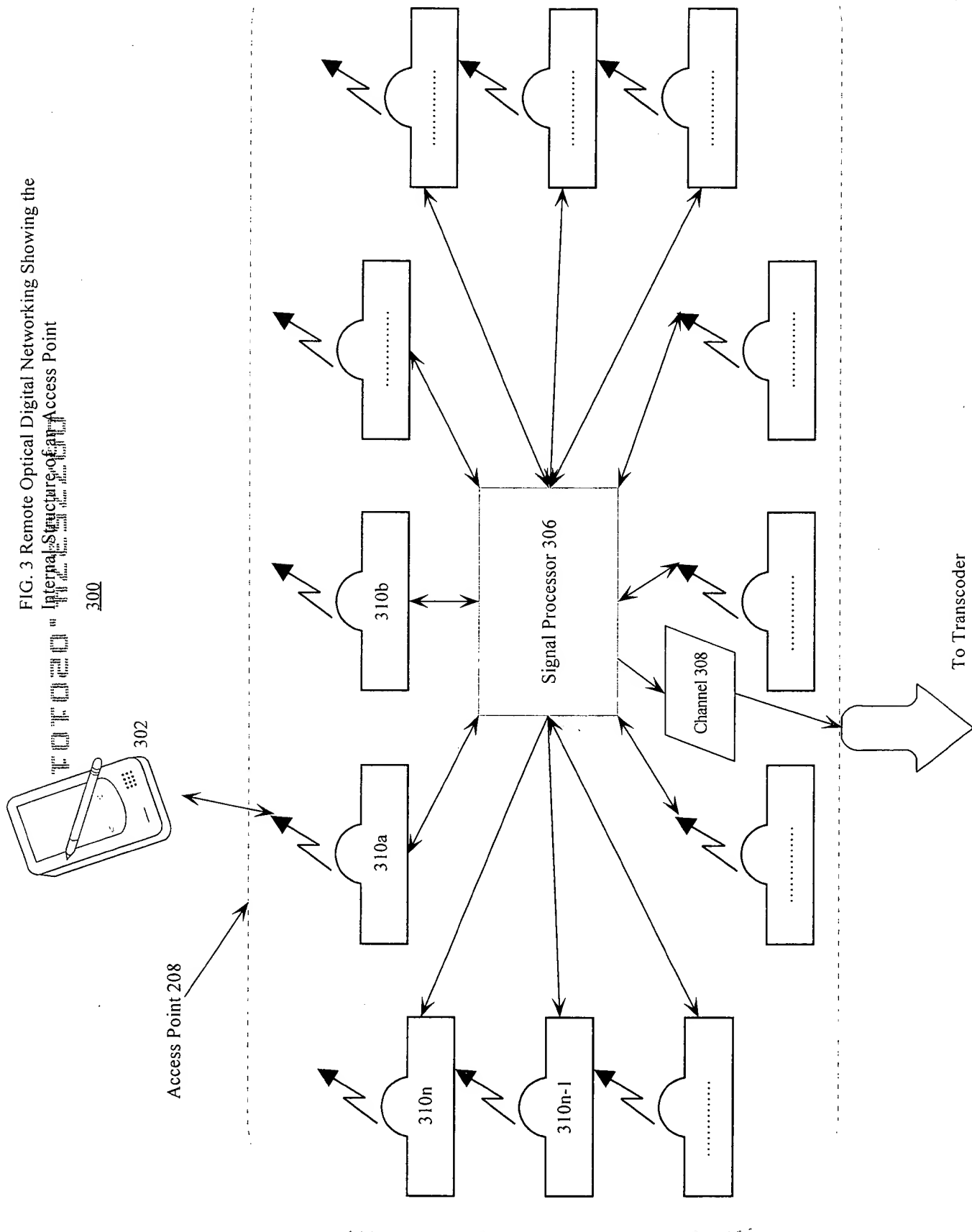
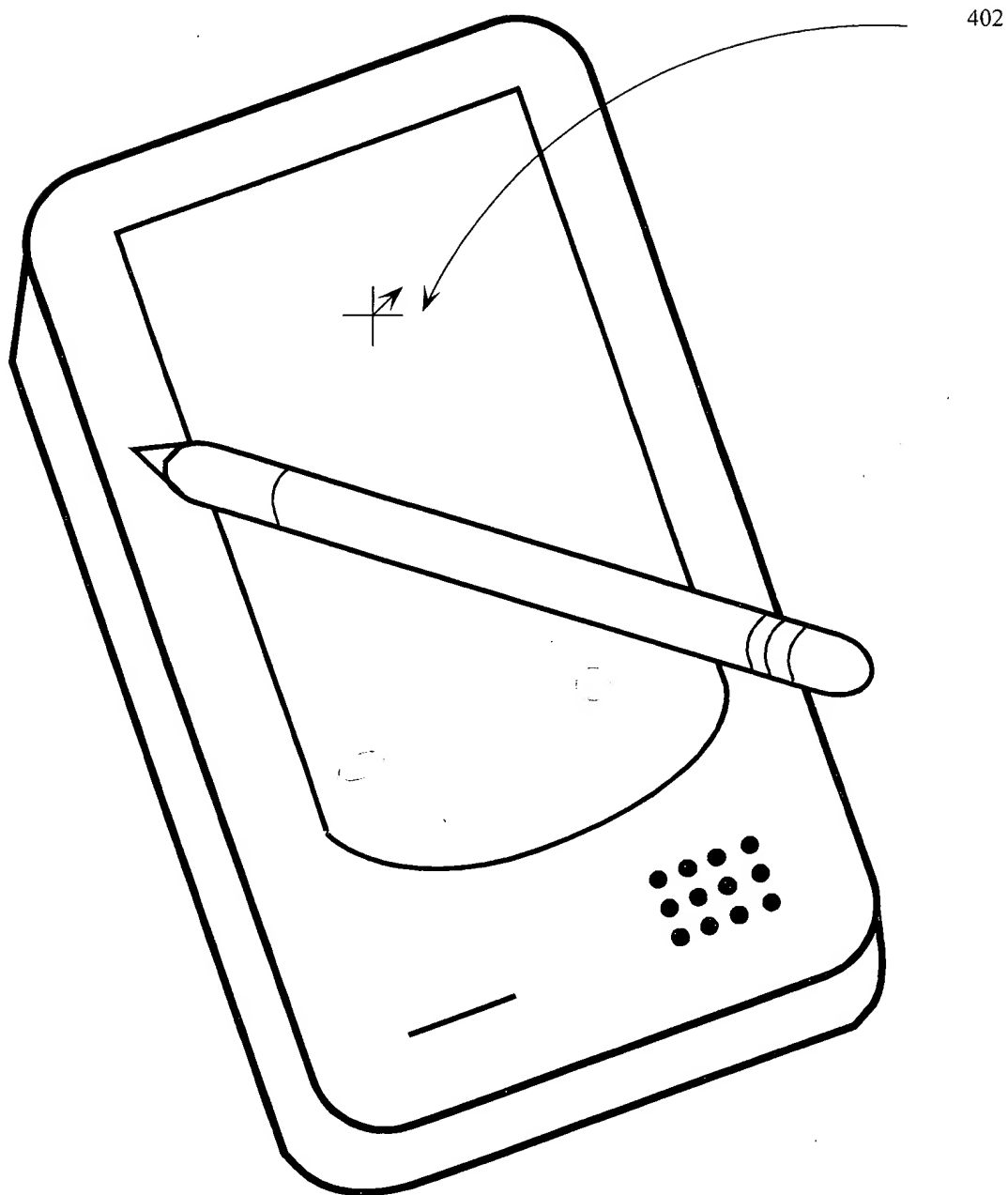


FIG. 4 Personal Digital Assistant with Indication of Signal Strength

400



# Figure 5 PDA Software

Fig 5A

Conventional IR Communication

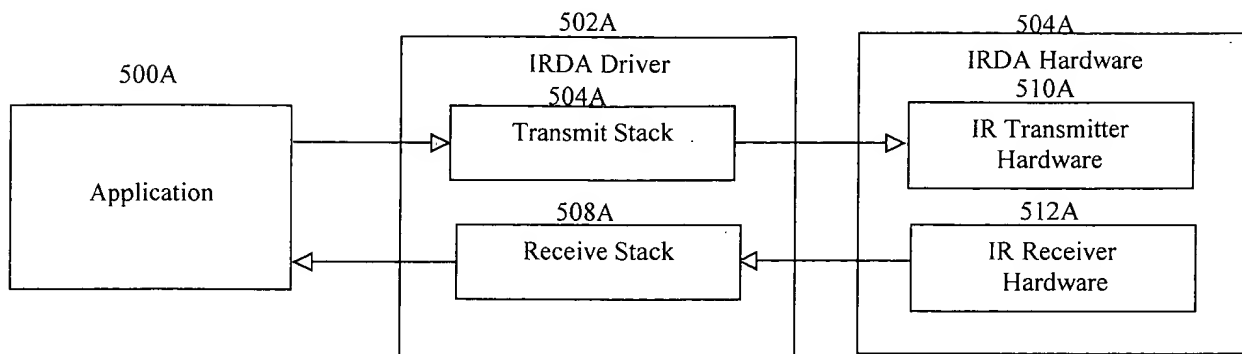


Fig 5B

Extended Range Symmetric IR Communication

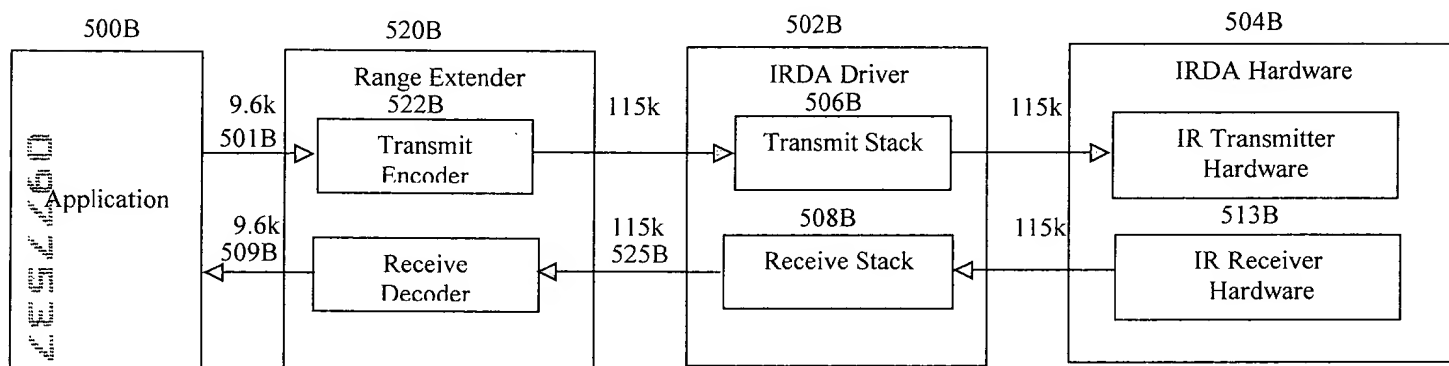


Fig 5C

Extended Range Asymmetric IR Communication

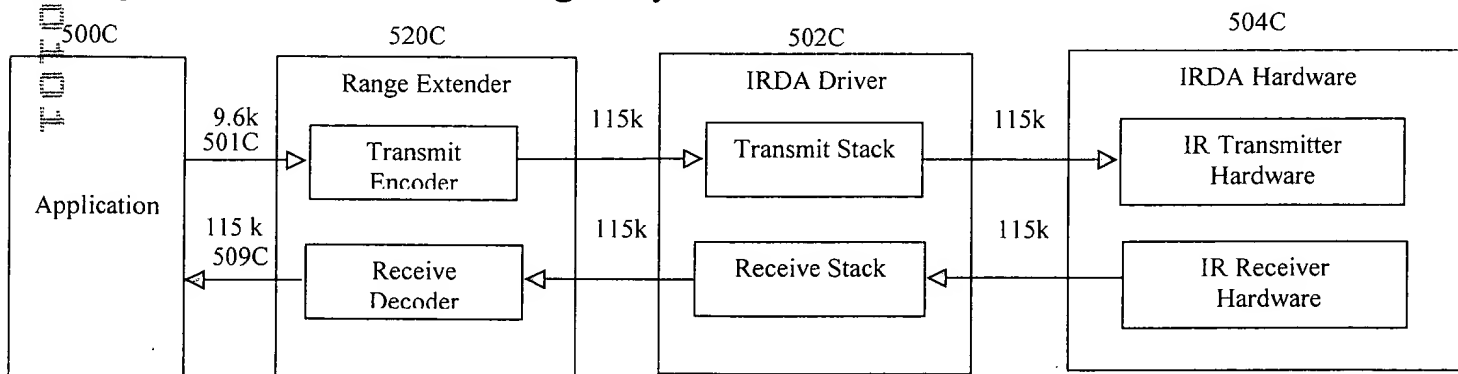


Fig 5D

Extended Range Symmetric IR Communication

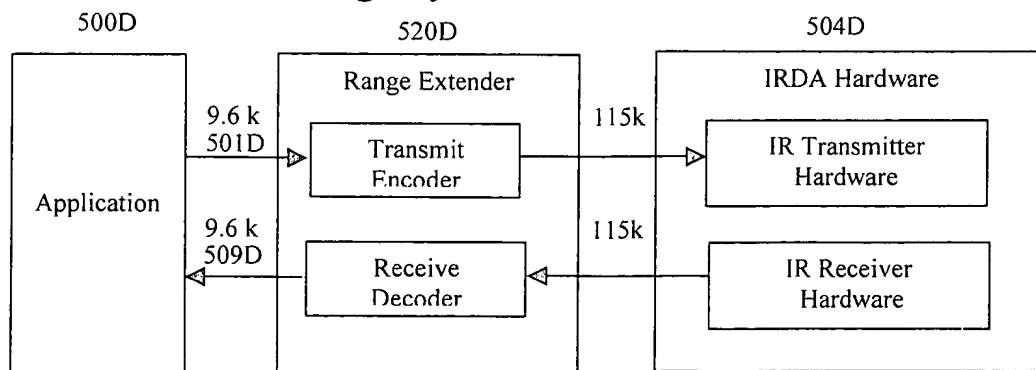


Figure 6 Transmit Encoder

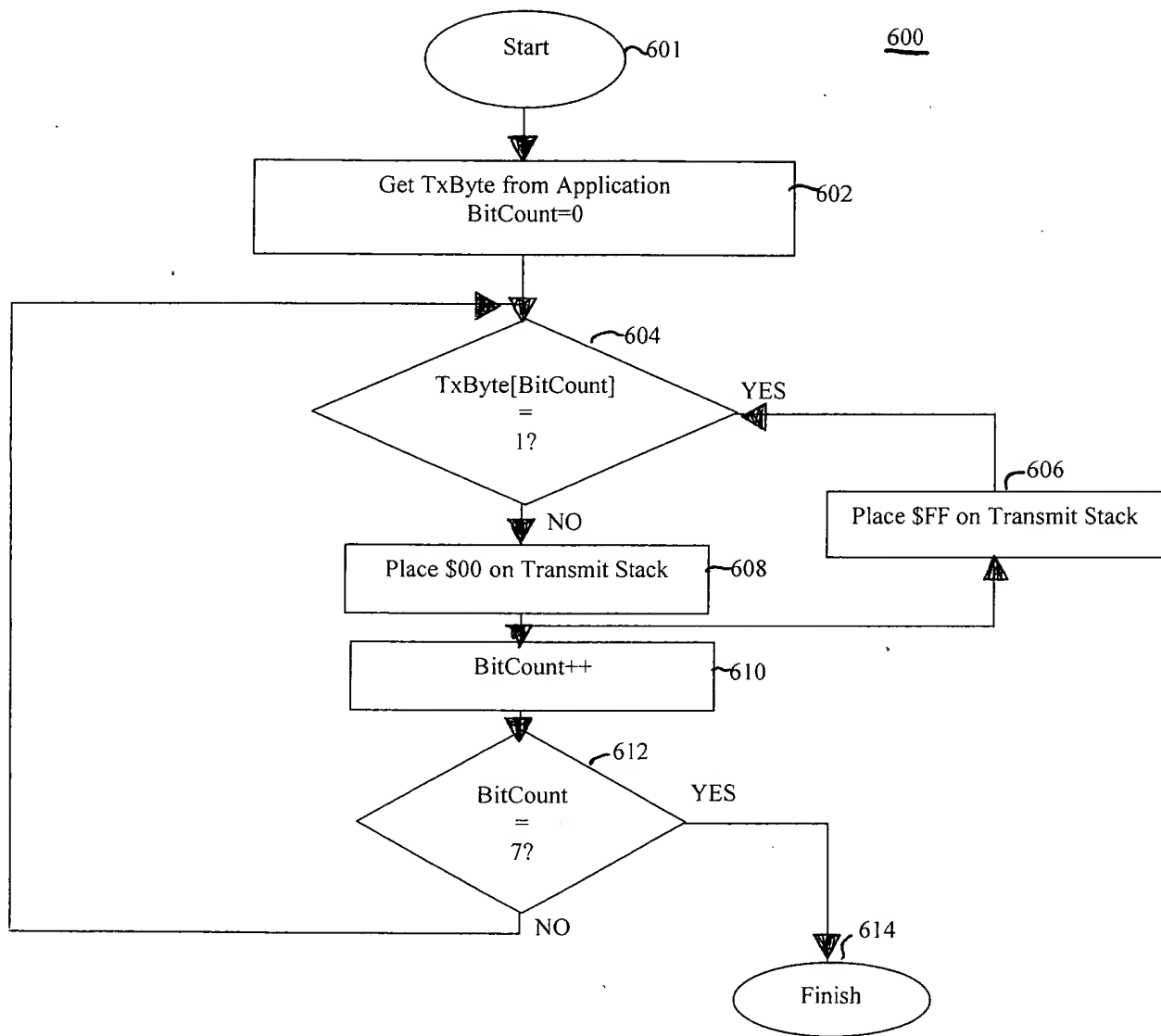


Figure 7 Receive Decoder

700

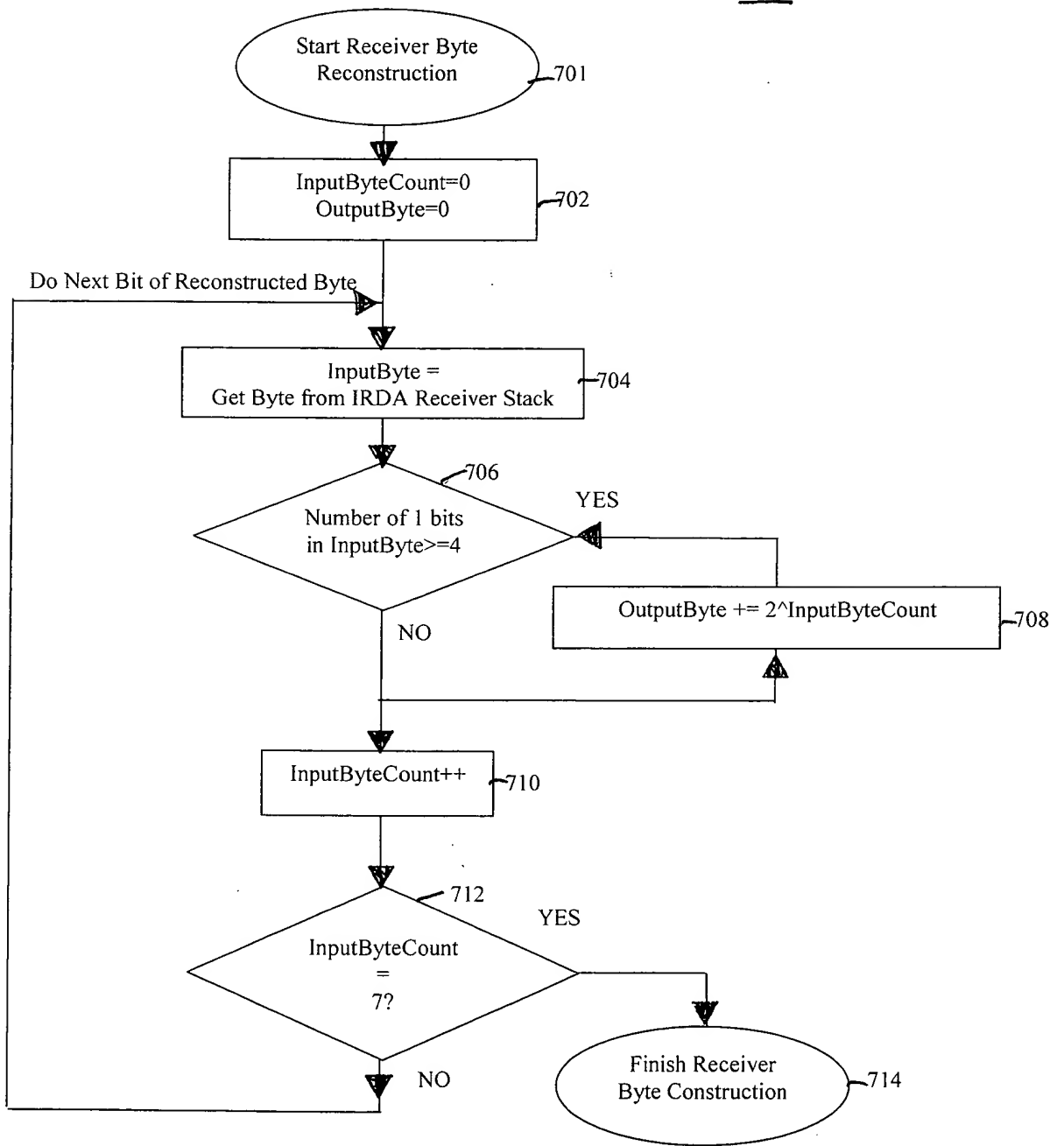
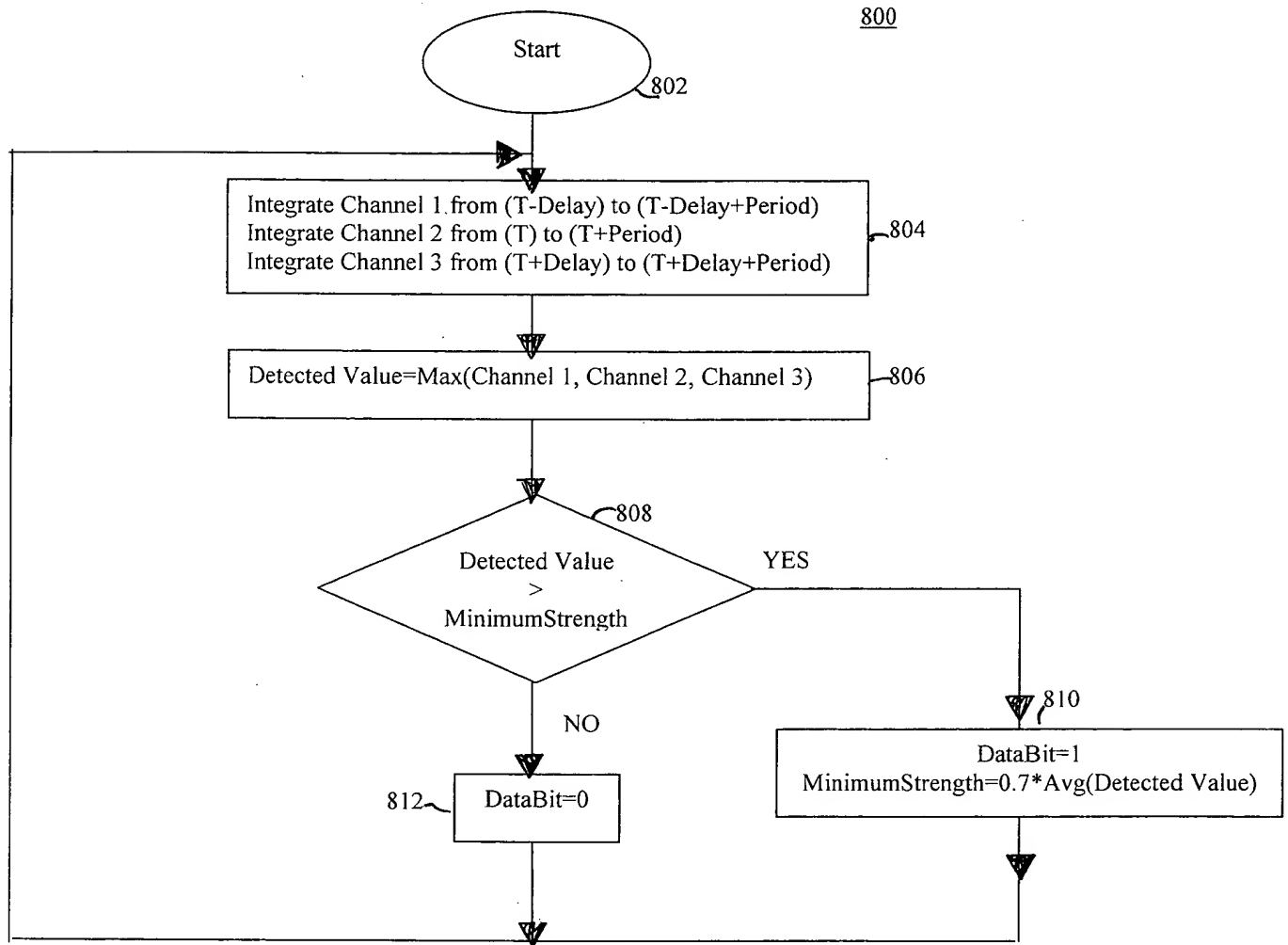


Figure 8

# IR Probe Receiver Synchronization Base Station



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